UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/549,645	09/20/2005	Arnd Ritz	DE030093US1	8073

24737 7590 07/25/2008
PHILIPS INTELLECTUAL PROPERTY & STANDARDS
P.O. BOX 3001
BRIARCLIFF MANOR, NY 10510

EXAMINER	
SNYDER, ZACHARY J	

ART UNIT	PAPER NUMBER
2889	

MAIL DATE	DELIVERY MODE
07/25/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/549,645	RITZ, ARND	
	Examiner	Art Unit	
	Zachary Snyder	2889	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *5/16/2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *20 September 2005* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

Applicant's arguments with respect to claims 1-7 have been considered but are moot in view of the new ground(s) of rejection.

Examiner withdraws objection to claim 4 for minor informalities.

Drawings

Figures 2 and 3 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

Claim 20 is objected to because of the following informalities: There is no period at the end of this claim. Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,534,903 B1 to Spiro et al. and further in view of U.S. Patent 4,652,789 to Kawakatsu et al.

In regard to claim 1, Spiro discloses an electric lamp comprising an interference film (coating 22, COL. 4, LINE 5) that comprises several layers (coating 22 is comprised of a plurality of layers, COL. 4, LINES 5-6), and

the layer structure comprises alternating layers with a higher refractive index and layers with a lower refractive index (preferred layers include alternating layers of low and high refractive index materials, COL. 4, LINES 6-7), and

at least the outer layer and/or at least one inner layer of the interference filter comprises a protective layer to reduce thermal and/or intrinsic stresses (thick outer layer of low refractive index material, as shown in table 1, inherently has the ability to reduce thermal and/or intrinsic stresses as it is made of the same material as the applicant's protective layer), and wherein

the thickness of the protective layer or protective layers has a value below 40% of the value of all other layers with the lower refractive index (thickness of low refractive index material(layer 26) is 1722 angstroms and the total thickness of all remaining low refractive index

material layers is 14,506 angstroms, so layer 26 is less than 40% the total thickness of remaining layers).

TABLE 1

LAYER	MATERIAL	PHYSICAL THICKNESS (Å)
1	H	665
2	L	1481
3	H	528
4	L	1683
5	H	526
6	L	1655
7	H	691
8	L	1287
9	H	666
10	L	1355
11	H	599
12	L	1330
13	H	561
14	L	1114
15	H	492
16	L	1125
17	H	553
18	L	1023
19	H	421
20	L	849
21	H	443
22	L	950
23	H	354
24	L	870
25	H	211
26	L	1722

Spiro does not disclose that this interference film is located directly on the surface of the lamp bulb.

Kawakatsu discloses in figure 1 a lamp comprising a lamp bulb (lamp bulb 1, COL. 2, LINE 15),

on the surface of which at least one interference filter (film 2, COL. 2, LINE 11) is at least partially located, wherein

at least this interference filter comprises several layers (film is composed of a plurality of laminated layers, COL. 2, LINE 30), wherein

the layer structure comprises alternating layers with a higher refractive index and layers with a lower refractive index (two different kinds of layers are disposed alternately, one of high refractive index and one of low refractive index, COL. 2, LINES 31-35).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to form the interference filter as taught by Spiro on the surface of a lamp bulb, as taught by Kawakatsu, because forming the interference film on the surface of the bulb will provide further improved lamp efficiency by enhancing as much as possible both the infrared ray reflectance and the visible light transmittance (COL. 1, LINE 40-45).

In regard to claim 2, Spiro in view of Kawakatsu teaches all the limitations of claim 1. Spiro also teaches that the materials used in the protective layer, the layer, and the lamp bulb have comparable indices of thermal expansion.

Applicant discloses the materials used in the protective layer, the low refractive index layer, and the lamp bulb are silicon dioxide. In figure 2 and 3, applicant shows that having a substrate (the bulb) made of quartz is known in the art. Spiro discloses that low refractive index layers and therefore the protective layer (layer 26 of table 1) are made of the same material (oxide of silicon, COL. 4, LINE 8) but does not specifically disclose the material of the bulb. Since applicant has shown that quartz (an oxide of silicon) bulbs are well-known, one of obvious skill in the art at the time of the invention would see the low cost benefit of using a quartz bulb in the lamp disclosed by Spiro in view of Kawakatsu since it will require only one material instead

of two. Since the protective layer, low refractive index layer, and lamp bulb would all be constructed of an oxide of silicon, they would have comparable indices of thermal expansion.

In regard to claim 3, Spiro in view of Kawakatsu teaches all the limitations of claim 1. Spiro also teaches that the layer of the interference filter with the lower refractive index preferably comprises mainly SiO_2 (an oxide of silicon may be the low refractive index material of coating 22, COL. 4, LINES 5-9).

In regard to claim 4, Spiro in view of Kawakatsu teaches all the limitations of claim 3. Spiro also discloses that the second layer comprises a material from the group of titanium oxide, tantalum oxide, niobium oxide, hafnium oxide, silicon nitride, and zirconium oxide ZrO_2, or a mixture of these materials (the high refractive index material may be made of an oxide of titanium, tantalum, niobium, hafnium, or zirconium, COL. 4, LINES 9-12).

In regard to claim 5, Spiro in view of Kawakatsu teaches all the limitations of claim 1. Spiro also teaches that the interference filter is used in an electric lamp (title of the invention) and one of ordinary skill in the art would know that such an interference filter would also be applicable to any electric lamp such as a high intensity discharge lamp.

In regard to claim 6, Spiro in view of Kawakatsu teaches all the limitations of claim 1. Spiro also teaches in another embodiment (shown in table 3) that one or all of the protective layers (layers 2 and 4) are arranged within the interference filter (the thickest layers of the low

refractive index material layer are layers 2 and 4 and are arranged within the interference filter and have a combined thickness of 3599 angstroms which is less than 40% the total thickness of all remaining lower refractive index material layers (13687 angstroms)).

TABLE 3

LAYER	MATERIAL	PHYSICAL THICKNESS (Å)
1	H	1035
2	L	1809
3	H	1041
4	L	1790
5	H	993
6	L	1745
7	H	989
8	L	1588
9	H	821
10	L	1296
11	H	712
12	L	1150
13	H	777
14	L	1164
15	H	762
16	L	1057
17	H	537
18	L	1432
19	H	500
20	L	861
21	H	454
22	L	921
23	H	429
24	L	881
25	H	402
26	L	1592

In regard to claim 7, Spiro in view of Kawakatsu discloses all the limitations of claim 1 and that this lamp of claim 1 is used as an illumination unit because the lamp itself is an illumination unit.

In regard to claim 8, Spiro in view Kawakatsu teaches all the limitations of claim 3. Spiro also teaches that the second layer of the interference filter comprises a material which has a higher refractive index than SiO_2 (an oxide of silicon is used as the low refractive index material and the high refractive index material is made of another material which implies that it has a higher refractive index than SiO_2 since it is the high refractive index layer, COL. 4, LINES 6-10).

In regard to claim 9, Spiro in view of Kawakatsu teaches all the limitations of claim 8. Spiro also teaches that second layer of the interference filter comprises zirconia (the second layer, the high refractive index layer, is made of an oxide of zirconium which is zirconia (ZrO_2), COL. 4, LINES 8-12)).

In regard to claim 10, Spiro in view of Kawakatsu teaches all the limitations of claim 9 and that second layer of the interference filter comprises mainly zirconium oxide (ZrO_2) (the second layer, the high refractive index layer, is made of an oxide of zirconium, COL. 4, LINES 8-12)).

In regard to claim 11, Spiro in view Kawakatsu teaches all the limitations of claim 2.

Applicant discloses the materials used in the protective layer, the low refractive index layer, and the lamp bulb are silicon dioxide. In figure 2 and 3, applicant shows that having a substrate (the bulb) made of quartz is known in the art. Spiro discloses that low refractive index layers and therefore the protective layer (layer 26 of table 1) are made of the same material

(oxide of silicon, COL. 4, LINE 8) but does not specifically disclose the material of the bulb. Since applicant has shown that quartz (an oxide of silicon) bulbs are well-known, one of obvious skill in the art at the time of the invention would see the low cost benefit of using a quartz bulb in the lamp disclosed by Spiro in view of Kawakatsu since it will require only one material instead of two. Since the protective layer, low refractive index layer, and lamp bulb would all be constructed of an oxide of silicon, they would have the same chemical composition.

In regard to claim 12, Spiro discloses a lamp (electric lamp 10, COL. 3, LINE 12) comprising a lamp bulb (not labeled, shown in figure 2),

an interference filter (coating 22, COL. 4, LINE 5) comprising a first plurality of layers having a first index of refraction and made of a first material (coating 22 is comprised of a plurality of layers and a high refractive index layer, COL. 4, LINES 5-10); and

a second plurality of layers having a second index of refraction (low refractive index layers, COL. 4, LINES 5-10) and made of a second material, the second index of refraction being higher than the first index of refraction, the second plurality of layers alternating with the first plurality of layers (coating 22 is comprised of a plurality of alternating layers that alternated layers of low and high refractive index materials, COL. 4, LINES 5-10), such that the filter begins at the lamp bulb with one of the second plurality of layers and ends with one of the first plurality of layers (shown in tables 1 and 3 that layer 1 (closest to the substrate, COL. 7, LINES 5-6 and COL. 9, LINES 49-50) are the high refractive index material and the last layer is the low refractive index material); and

at least one protective layer made of the first material (layer 26 of table 1 and layers 2 and 4 of table 3), the protective layer having a thickness that is no more than 40% of the total thickness of the first plurality of layers (thickness of low refractive index material (layer 26 of table 1) is 1722 angstroms and the total thickness of all remaining low refractive index material layers is 14,506 angstroms and the thickest layers of the low refractive index material layer (layers 2 and 4 of table 3) have a combined thickness of 3599 angstroms which is less than 40% the total thickness of all remaining lower refractive index material layers (13687 angstroms).

Spiro does not disclose that the interference filter is disposed on a surface of the lamp bulb.

Kawakatsu discloses in figure 1 a lamp comprising a lamp bulb (lamp bulb 1, COL. 2, LINE 15),

on the surface of which at least one interference filter (film 2, COL. 2, LINE 11) is at least partially located, wherein

at least this interference filter comprises several layers (film is composed of a plurality of laminated layers, COL. 2, LINE 30), wherein

the layer structure comprises alternating layers with a higher refractive index and layers with a lower refractive index (two different kinds of layers are disposed alternately, one of high refractive index and one of low refractive index, COL. 2, LINES 31-35).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to form the interference filter as taught by Spiro on the surface of a lamp bulb, as taught by Kawakatsu, because forming the interference film on the surface of the bulb will

provide further improved lamp efficiency by enhancing as much as possible both the infrared ray reflectance and the visible light transmittance (COL. 1, LINE 40-45).

In regard to claim 13, Spiro in view of Kawakatsu teaches all the limitations of claim 12. Spiro also teaches that the second material comprises zirconia (the second layer, the high refractive index layer, is made of an oxide of zirconium which is zirconia (ZrO_2), COL. 4, LINES 8-12)). Spiro also teaches that the interference filter is used in an electric lamp (title of the invention) and one of ordinary skill in the art would know that such an interference filter would also be applicable to any electric lamp such as a high intensity discharge lamp.

In regard to claim 14, Spiro in view of Kawakatsu teaches all the limitations of claim 13 and the first material comprises silica (an oxide of silicon may be the low refractive index material of coating 22, COL. 4, LINES 5-9).

In regard to claim 15, Spiro in view of Kawakatsu teaches all the limitations of claim 12. Spiro also teaches the protective layer comprises an outer layer (layer 26 as shown in table 1).

In regard to claim 16, Spiro in view of Kawakatsu teaches all the limitations of claim 12 and that the protective layer comprises at least one of the first plurality of layers intermediate between the bulb and an outside of the interference filter (layers 2 and 4 as shown in table 3).

In regard to claim 17, Spiro in view of Kawakatsu teaches all the limitations of claim 16 and that the protective layer comprises at least two of the first plurality of layers intermediate between the bulb and an outside of the interference filter (layers 2 and 4 as shown in table 3).

In regard to claim 18, Spiro in view of Kawakatsu teaches all the limitations of claim 12.

Applicant discloses the materials used in the protective layer, the low refractive index layer, and the lamp bulb are silicon dioxide. In figure 2 and 3, applicant shows that having a substrate (the bulb) made of quartz is known in the art. Spiro discloses that low refractive index layers and therefore the protective layer (layer 26 of table 1 and layers 2 and 4 of table 3) are made of the same material (oxide of silicon, COL. 4, LINE 8) but does not specifically disclose the material of the bulb. Since applicant has shown that quartz (an oxide of silicon) bulbs are well-known, one of obvious skill in the art at the time of the invention would see the low cost benefit of using a quartz bulb in the lamp disclosed by Spiro in view of Kawakatsu since it will require only one material instead of two.

In regard to claim 19, Spiro in view Kawakatsu teaches all the limitations of claim 1. Spiro also inherently discloses that the protective layer reduces thermal stress (thick layer(s) of low refractive index material, as shown in tables 1 and 3, inherently has the ability to reduce thermal stress as it is made of the same material as the applicant's protective layer).

In regard to claim 20, Spiro in view of Kawakatsu teaches all the limitations of claim 1. Kawakatsu teaches that the invention is a halogen lamp bulb (COL. 2, LINE 8).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Zachary Snyder whose telephone number is (571)270-5291. The examiner can normally be reached on Monday through Thursday, 7:30AM to 6PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Toan Ton can be reached on (571)272-2303. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Zachary Snyder/
Examiner, Art Unit 2889

/Karabi Guharay/
Primary Examiner, Art Unit 2889